
**Information technology — Automatic
identification and data capture
techniques — Bar code master test
specifications**

*Technologies de l'information — Techniques d'identification automatique et
de capture des données — Spécifications pour essai principal de codes à
barres*

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 15421:2000

<https://standards.iteh.ai/catalog/standards/sist/fed662fc-f25d-4cb3-b05d-16444c138b6c/iso-iec-15421-2000>

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 15421:2000

<https://standards.iteh.ai/catalog/standards/sist/fed662fc-f25d-4cb3-b05d-16444c138b6c/iso-iec-15421-2000>

© ISO/IEC 2000

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Page

| | |
|---|----|
| Foreword..... | iv |
| Introduction | v |
| 1 Scope | 1 |
| 2 Conformance..... | 1 |
| 3 Normative references | 1 |
| 4 Terms and definitions | 1 |
| 5 Symbols and abbreviated terms | 3 |
| 6 Physical requirements | 3 |
| 6.1 Material | 3 |
| 6.1.1 Dimensional stability | 3 |
| 6.1.2 Archival properties | 3 |
| 6.2 Physical requirements controlled by the manufacturing process | 3 |
| 6.2.1 Target bar width | 3 |
| 6.2.2 Bar width adjustment | 3 |
| 6.3 Tolerances | 4 |
| 6.3.1 Tolerance A - all symbologies | 4 |
| 6.3.2 Tolerance B - two width symbologies | 4 |
| 6.3.3 Tolerance C - (n,k) symbologies | 4 |
| 6.3.4 Tolerance D - all symbologies | 4 |
| 6.4 Bar edge characteristics | 4 |
| 6.4.1 Bar edge conformance | 4 |
| 6.4.2 Bar edge gradient | 4 |
| 6.5 Defects | 5 |
| 6.6 Quiet zones..... | 5 |
| 6.7 Corner marks..... | 5 |
| 6.8 Optical densities | 5 |
| 6.8.1 Minimum density (D_{\min}) | 5 |
| 6.8.2 Maximum density (D_{\max})..... | 5 |
| 6.9 Orientation..... | 5 |
| 6.10 Polarity..... | 5 |
| 6.11 Encodation | 5 |
| 6.12 Human readable interpretation..... | 5 |
| 7 Test methods..... | 6 |
| 7.1 Bar and space width measurement | 6 |
| 7.1.1 Conditions for dimensional measurements..... | 6 |
| 7.1.2 Calculation of the achieved bar width adjustment..... | 6 |
| 7.2 Test report and traceability..... | 7 |
| Annex A (informative) Optical density profiles | 8 |

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 15421 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 31, *Automatic identification and data capture techniques*.

Annex A of this International Standard is for information only.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO/IEC 15421:2000
<https://standards.iteh.ai/catalog/standards/sist/fed662fc-f25d-4cb3-b05d-16444c138b6c/iso-iec-15421-2000>

Introduction

The technology of bar coding is based on the recognition of patterns encoded in bars and spaces of specified dimensions. A wide variety of methods exists by which these bar and space patterns can be reproduced as a physical image. Conventional printing processes such as offset lithography, photogravure, letterpress, screen process, hot foil stamping and flexography, require one or more intermediate image carriers for example, artwork, photographic film, printing plates or cylinders, screens or dies.

The term bar code master refers to the first physical image of the complete bar code symbol from which the other image carriers can be produced. In order to make allowances for variability of the production processes, and to ensure the correct encoding of the data to be represented, certain procedures must be performed during the preparation of the bar code master.

This International Standard does not define the procedures but states the requirements for a bar code master.

iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO/IEC 15421:2000

<https://standards.iteh.ai/catalog/standards/sist/fed662fc-f25d-4cb3-b05d-16444c138b6c/iso-iec-15421-2000>

iTeh STANDARD PREVIEW **(standards.iteh.ai)**

ISO/IEC 15421:2000

<https://standards.iteh.ai/catalog/standards/sist/fed662fc-f25d-4cb3-b05d-16444c138b6c/iso-iec-15421-2000>

Information technology — Automatic identification and data capture techniques — Bar code master test specifications

1 Scope

This International Standard defines the physical and related attributes of a bar code master and the quality criteria by which its conformity with this standard is to be assessed, and contains guidelines to assist in its use. The standard covers all forms of bar code master, irrespective of the mode of origination of the initial image, intended for reproduction by conventional printing processes.

2 Conformance

Conformance with this International Standard shall be established by measurement of the bar code master in accordance with the test methods defined in clause 7 to establish that the dimensional and optical density requirements set out in clause 6 have been met.

3 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 5-3, *Photography — Density measurements — Part 3: Spectral conditions*.

ISO 5466, *Photography — Processed safety photographic films — Storage practices*.

EN 1556, *Bar coding — Terminology*.

4 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in EN 1556 and the following apply.

4.1

achieved bar width difference

The average difference in width between specified and actual dimensions, for all bars within the symbol.

4.2

bar edge

The junction between a bar and space in a bar code symbol.

4.3

bar edge conformance

The accuracy with which a bar edge or part of a bar edge is located, relative to its specified location.

4.4

bar edge contour

The line joining all bar/space transitions at all points along the height of a bar.

4.5

bar edge gradient

The rate of change in optical density at a bar edge per unit distance, measured from the Optical Density Profile.

4.6

bar width adjustment (BWA)

The amount of decrease (bar width reduction) or increase (bar width increase) by which the bars of a bar code master are adjusted, to compensate respectively for gain or loss of bar widths during reprographic and printing processes.

4.7

bar width increase

See bar width adjustment.

4.8

bar width reduction

See bar width adjustment.

4.9

bar width tolerance

The maximum permitted variation between the target dimensions and the achieved dimensions of a bar.

4.10

base density

The lowest optical density of the bar code master material.

4.11

negative image

An image where the bars are of low optical density and the spaces are of high optical density.

4.12

nominal bar width (EAN/UPC Symbols)

The reference bar width defined by the symbology specification at magnification = 1,0, with which other bar widths included in the symbology specification are compared or related.

4.13

optical density profile

A continuous plot of the optical density of the image of a bar code master, constructed from measurements of optical density made at micrometric intervals of distance, along a line which passes at a right angle through all of the bars of the symbol. (Reference annex A.)

4.14

polarity

The negative or positive property of an image.

4.15

positive image

An image where the bars are of high optical density and the spaces are of low optical density.

4.16

specified bar width

(1). (EAN/UPC Symbols)

Equal to the nominal bar width, modified by magnification factor and bar width adjustment, if applicable i.e. (NOMINAL multiplied by MAGNIFICATION) \pm BAR WIDTH ADJUSTMENT.

(2).(other symbols)

Equal to the X dimension multiplied by the ratio or number of modules, as appropriate, modified by bar width adjustment, if applicable, i.e. (X multiplied by RATIO) \pm BAR WIDTH ADJUSTMENT, or (X multiplied by NO. OF MODULES) \pm BAR WIDTH ADJUSTMENT.

4.17**target element width**

The calculated dimension for an element including bar width adjustment.

5 Symbols and abbreviated terms

D = optical density as defined in ISO 5-3.

6 Physical requirements**6.1 Material**

A bar code master shall be produced on material which conforms to the following physical requirements.

6.1.1 Dimensional stability

The finished bar code master shall be such that dimensional variations due to changes in ambient conditions do not exceed:

— 0,01 per cent per 1 % change in relative humidity (RH).

— 0,01 per cent per 1 °C change in temperature.

Dimensional stability requirements shall be satisfied within the temperature range of 0 °C to 60 °C and the relative humidity range of 10 % to 70 %.

Samples shall be measured as specified in 7.1 and at the specified temperature and relative humidity.

6.1.2 Archival properties

For optimum life a bar code master (produced on photographic film) needs to be properly stored and used in controlled conditions which are in accordance with ISO 5466.

6.2 Physical requirements controlled by the manufacturing process**6.2.1 Target bar width**

When measured according to the methods described in clause 7, the width of each element of the bar code master shall equal the target width for that element, subject to the tolerances defined in 6.3.

6.2.2 Bar width adjustment

Bar width adjustment shall be applied uniformly and symmetrically to every bar throughout the symbol.

NOTE In consequence, where bar width increase is applied, the widths of spaces will also be reduced by an equal amount, and vice versa.